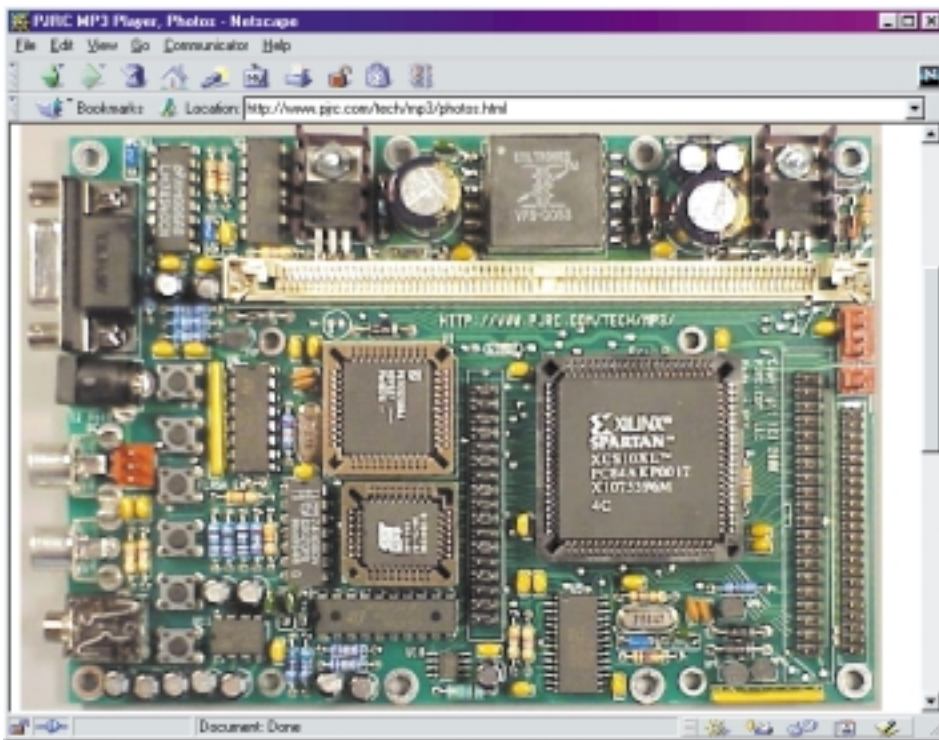


More MP3 Projects

DIY portables

A few months ago under this heading, we presented a number of Internet addresses for MP3 projects. Most of them are based on re-using hardware from an old PC. However, there are also other possibilities, including projects for building your own portable MP3 player.



A design based on a PC motherboard, a hard disk or CD-ROM drive, a few pushbuttons, an LCD module and some special software is not such a bad approach to making your own MP3 player, but the result can hardly be said to be compact. Nowadays, the subject of MP3 has become so popular that an increasing number of electronics engineers and hobbyists have given their attention to it, with the result that you can now find complete web-sites that are dedicated to the construction of truly portable (as opposed to 'moveable') MP3 players. A (mini) hard disk, CD-ROM drive or flash memory card is used as the storage medium.

The MP3Projects site [1] is a good starting point for searching for such projects. This site gives an extensive and up-to-date overview of DIY MP3 projects on the World Wide Web. Starting from this site, we visited a number of MP3 addresses related small portable players. This time, we have intentionally omitted the larger types of units (those using PC motherboards).

The MP3 PubliC from **MP3ar** [2] is a very nice example of an MP3 player. It involves a small printed circuit board that is slightly larger than a

computer mouse. An LCD can be stuck on top of the circuit board, and the newest version allows the connection of a CD-ROM drive as well as a hard disk drive. An accompanying PC program enables the user to download files from the PC to the hard disk. All circuit board layouts, software and source code for the project are available free of charge. This project has been created by three Argentinean electronics engineers. The estimated cost is around 130 dollars.

The **High Capacity MP3 player** van **MPRJ** [3] is a design that contains more ICs, but it certainly still deserves the name 'portable'. This player uses a normal (mini) hard disk drive, which provides enough capacity for hundreds of hours of music. Thanks to a 24-bit DAC, this unit delivers outstanding sound quality. The player can handle various types of MP3 compression, so the user can decide what level of sound quality he or she wants. MPRJ can even provide all of the components for this project. You can buy a fully assembled and tested circuit board (\$150), a bare circuit board or the individual components. The source code for the firmware is available for anyone who wants to make a few changes to how the player works.

The design of the **MoP3-player** from Frank Hickl & Mario Becker [4] is still under development. This system is built around an inexpensive MC68HC11 embedded controller. As with many other players, MP3



decoding is handled by an MAS3507D or STA013 IC. A fairly large LCD panel (128 × 64 pixels) simplifies communications with this device. The photos show a relatively small printed circuit board, so we can rightly consider this to be a portable player. This unit currently works with a CD-ROM drive, but it is the intention that it will shortly be

able to work with a hard disk drive as well.

The YAMPP site [5] is another location where a lot of work is going on. The name stands for 'Yet Another MP3 Player'. Here you will find several different hardware designs, some of which are still under development. All of the players have connectors for an IDE hard disk drive

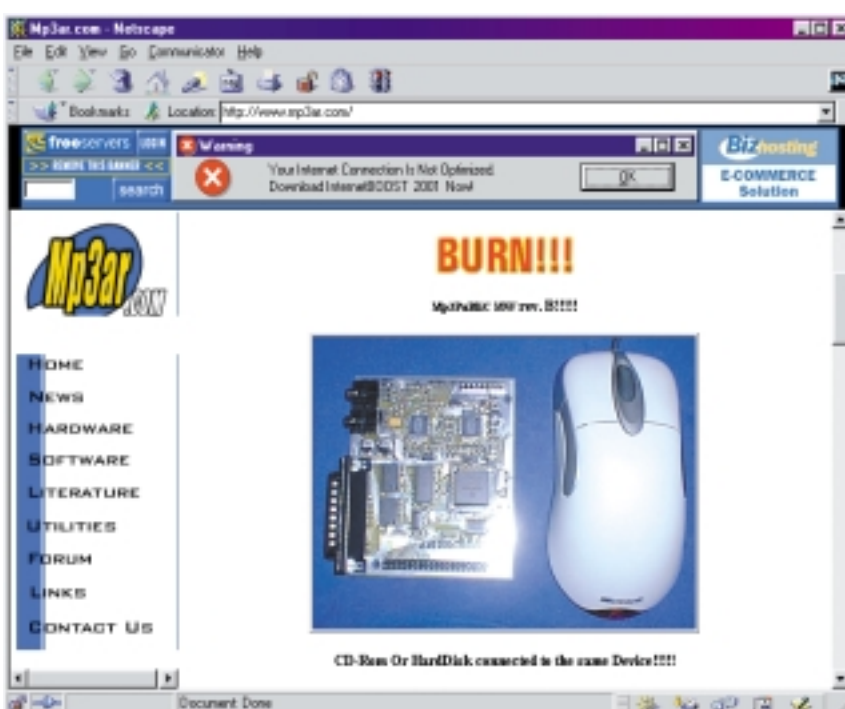
and a display. It is interesting to spend a bit of time studying and comparing the designs, since different approaches have been taken based on various processors. Here again, as with most player designs, all hardware and software information is freely available.

Audio Affinity 2000 [6], which comes from a number of electronics types in Florida, is a special project that is just getting started. The unusual feature of this project is that it supports both recording and playback in the MP3 format. Up to now, there isn't much in the way of concrete items to be seen on this site, but you might want to take a look at it from time to time in the future.

The **ELM MP3 Player** [7] is a design that looks like a commercial product, at least to judge by the prototype made by its Japanese designer. This small player uses Smartmedia memory cards to store the music data. The circuit is built around an Atmel controller and a Micronas DSP/DAC chip set.

Finally, we looked at a player that evidently comes from the final term project of a pair of students (Peter D'Antonio and Daniel Riiff). Their design, which goes by the name '**EE 476, Final Project: Portable MP3 Player**' [8], is still in the prototype phase, but its overall capabilities are quite attractive. If the two gentlemen succeed in reducing all of this to a printed circuit board of acceptable dimensions, it will certainly be an interesting player. The special feature of this player is that it uses flash memory cards.

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Website url's

- [1] MP3Projects:
<http://www.mp3projects.com/>
- [2] MP3 PuBliC:
<http://www.mp3ar.com/>
- [3] MPRJ:
<http://www.pjrc.com/tech/mp3/>
- [4] MoP3:
<http://www.geocities.com/SiliconValley/Circuit/3150/index.html>
- [5] YAMPP:
<http://www.myplace.nu/mp3/>
- [6] Audio Affinity 2000:
<http://www.audioaffinity.com/>
- [7] ELM MP3 Player:
http://elm-chan.org/reports/mpc/report_e.html
- [8] Portable MP3 Player:
<http://instruct1.cit.cornell.edu/courses/ee476/FinalProjects/s2000/peterdan/final.htm>